APPENDIX: CLEAN COPY OF PENDING CLAIMS

1. (Currently Amended): An apparatus for determining the density of at least one fluid within a pipe, the density meter comprising:

a first sound speed meter positioned at a first sensing region along the pipe which provides a first system effective sound speed signal;

a second sound speed meter positioned at a second sensing region along the pipe which provides a second system effective sound speed signal;

a signal processor, responsive to the first and the second system sound speed signals, which provides a density signal indicative of the density of the fluid within the pipe, and

wherein the first sensing region has a first compliance and wherein the second sensing region has a second compliance and wherein the first and second compliances are different.

2. (Currently Amended): The apparatus of claim 1, wherein the first sensing region has a first cross sectional compliance and wherein the second sensing region has a second cross sectional compliance and wherein the cross sectional compliances are substantially different.

3. (Canceled).

4. (Currently Amended): The apparatus of claim 1, further comprising a concentric shell positioned around each of the first and the second sound speed meters thereby isolating the first and the second sound speed meters from an outside environment.

5. (Currently Amended): The apparatus of claim 1, wherein the first and the second sound speed meters determine the first and second system effective sound speed signals from one-dimensional acoustic pressure waves traveling along the pipe.

6. (Currently Amended): The apparatus of claim 1, wherein at least one of the first and the second sound speed meters comprises a fiber optic based sound speed meter.

7. (Currently Amended): The apparatus of claim 2, wherein the first or the second sensing region of the pipe comprises a non-circular cross sectional geometry.

8. (Currently Amended): The apparatus of claim 7, wherein the non-circular cross sectional geometry comprises an oval shape.

9. (Currently Amended): The apparatus of claim 2, further comprising an input line positioned between the first and the second sensing regions to provide a substance into the fluid.

10. (Currently Amended): A method for measuring the density of a fluid within a pipe, the method comprising:

a) measuring a first effective system sound speed at a first sensing region with a first compliance along the pipe and providing a first effective system sound speed signal;

b) measuring a second effective system sound speed at a second sensing region with a second compliance different from the first compliance along the pipe and providing a second effective system sound speed signal; and

c) calculating the density using the first and the second effective system sound speed signals.

11. (Currently Amended): The method of claim 10, wherein the calculating step (c) comprises:

d) subtracting the first and the second effective system sound speed signals to obtain a difference related to a compliance difference between the first and second sensing regions.

12. (Currently Amended): The method of claim 10, wherein the measuring steps (a) and (b) comprise measuring a propagation velocity of a one-dimensional acoustic pressure wave traveling through the fluid.

13. (Currently Amended): The method of claim 10, wherein the step of measuring the first and the second effective system sound speeds comprises measuring a strain of the pipe.

14. (New): The apparatus of claim 1, further comprising a tube positioned along either the first sensing region or the second sensing region and within a flow path of the fluid within the pipe.

15. (New): An apparatus for determining the density of at least one fluid within a pipe, the density meter comprising:

a first meter positioned at a first sensing region along the pipe;

a second meter positioned at a second sensing region along the pipe;

a signal processor, responsive to signals from the first and the second meters, which provides a density signal indicative of the density of the fluid within the pipe; and

wherein the first sensing region has a first compliance and wherein the second sensing region has a second compliance and wherein the first and second compliances are different.

16. (New): The apparatus of claim 15, wherein the first sensing region has a first cross sectional compliance and wherein the second sensing region has a second cross sectional compliance and wherein the cross sectional compliances are substantially different.

17. (New): The apparatus of claim 15, wherein the first and the second sound speed meters determine the first and second system effective sound speed signals from one-dimensional acoustic pressure waves traveling along the pipe.

18. (New): The apparatus of claim 15, wherein the at least one of the first and the second sound speed meters comprises a fiber optic based sound speed meter.

19. (New): The apparatus of claim 15, wherein the first or the second sensing region of the pipe comprises a non-circular cross sectional geometry.

20. (New): The apparatus of claim 15, further comprising an input line positioned between the first and the second sensing regions to provide a substance into the fluid.

21. (New): The apparatus of claim 15, further comprising a tube positioned along either the first sensing region or the second sensing region and within a flow path of the fluid within the pipe.

22. (New): A method for measuring the density of a fluid within a pipe, the method comprising:

a) measuring a first parameter at a first sensing region with a first compliance along the pipe;

b) measuring a second parameter at a second sensing region with a second compliance different from the first compliance along the pipe; and

c) calculating the density of the fluid using the first and the second parameters.

23. (New): The method of claim 22, wherein the calculating step (c) comprises:

d) subtracting the first and the second effective system sound speed signals to obtain a difference related to a compliance difference between the first and second sensing regions.

24. (New): The method of claim 22, wherein the measuring steps (a) and (b) comprise measuring a propagation velocity of a one-dimensional acoustic pressure wave traveling through the fluid.

25. (New): The method of claim 22, wherein the measuring step (a) and (b) comprise measuring a strain of the pipe.